

# New 30 Year Climate Normals

The National Weather Service (NWS) will incorporate the new 1981-2000 Climate Normals into our climate text products on August 1<sup>st</sup>. The products affected which WFO Des Moines issues will be:

- Daily Climatological Report (CLI)
- Monthly Climatological Report (CLM)
- Annual Climatological Report (CLA)
- Preliminary Local Climatological Data Report (CF6)

Any product that crosses the August 1<sup>st</sup> implementation date, such as the Annual Climatological Report, will use the new 1981-2010 Climate Normals for required calculations for the entire period.

Climate Normals are calculated every 10 years and are an average of 30 years of climate data. The calculation are done by NCDC. More information regarding the normals can be found at;

<http://www.ncdc.noaa.gov/oa/climate/normals/usnormals.html>

## Historical Perspective

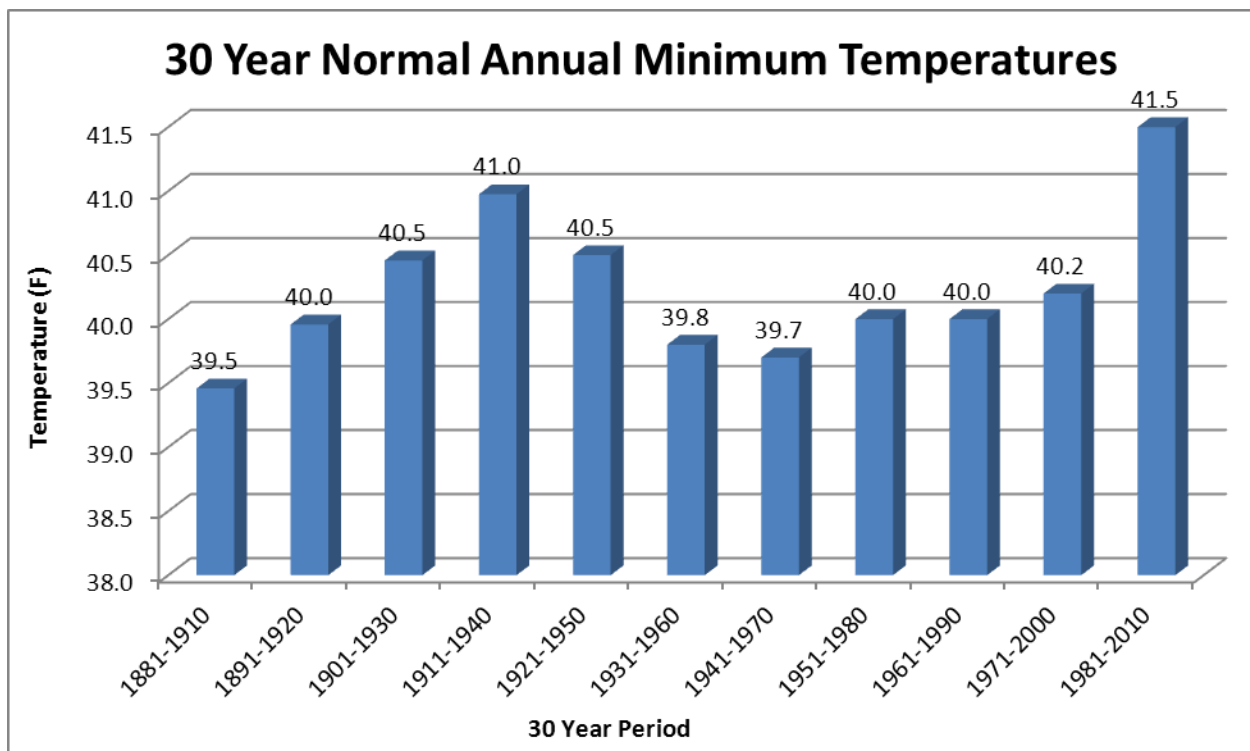
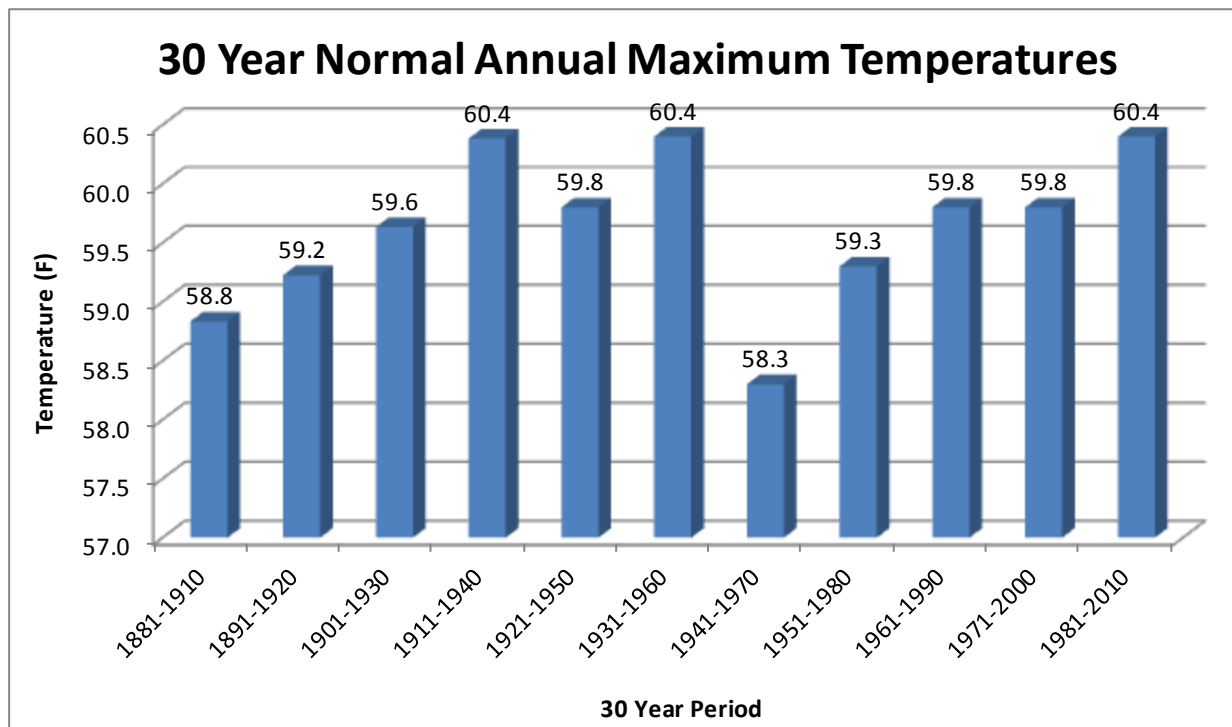
To provide a local historical perspective of how Climatological Normals have varied over the past century, some additional detail has been provided below for Des Moines and Waterloo. The data is derived from published NCDC climatological averages starting with the Normals from 1921-1950. Normals prior to this time were calculated from the Northeast Regional Climate Center historical database and are likely not to be as robust as the published data from NCDC, but should be sufficient enough to extend the Normals back into the late 1800's.

### Temperatures – Des Moines

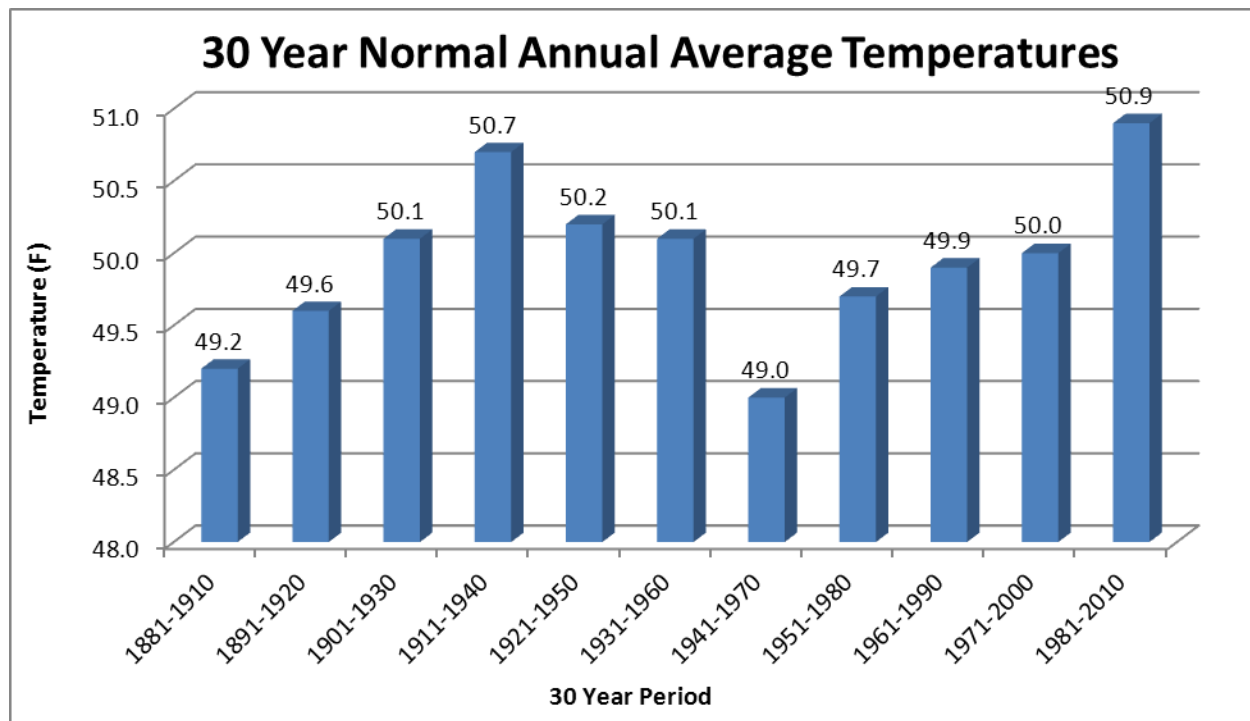
The following three graphs provide the 30 Year Annual Normals for maximum, minimum and average temperature respectively at Des Moines. All of the graphs start with the 30 year time period from 1881-1910 and extend to the newly issued Normals from 1981-2010. The first graph depicting the maximum temperatures indicates overall warming from the beginning of the graph into the first part of the 20<sup>th</sup> century. The maximum temperatures show a significant drop during the middle part of the 1900's with a gradual warming trend to the present. The present readings are on par with the warmest maximums seen in the first half of the 1900's.

As with the maximum Normals, the minimum Normals gradually rise into the first half of the 1900's before a more gradual cooling into the middle half of the century. The minimums remained nearly flat until late in the 1900's when a significant climb in overnight lows along with the removal of the decade

of the 1970s which had relatively cool lows, produced over a one degree climb in the annual minimums in the newly issued Normals.



The annual temperature graph shows similar behavior as the others with a rise into the first part of the 20<sup>th</sup> century, the cooling during the middle part of the century with a rise toward the end, becoming more rapid in the recent set of Normals. The average temperature in the newly released Normals is the warmest historically and on par with the values seen during the 1911-1940 timeframe.



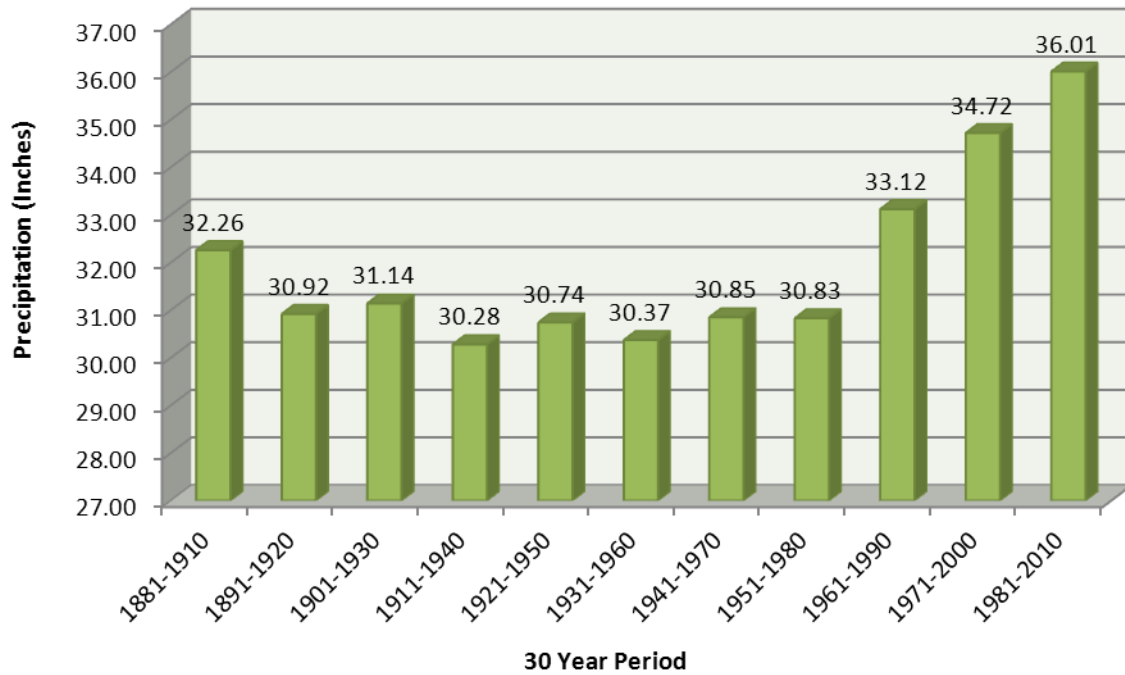
## Precipitation – Des Moines

Precipitation during this time stayed in a relatively narrow range from 30 to 32 inches from the 1881-1910 to the 1951-1980 timeframe. Thereafter, a sharp increase in precipitation has occurred with almost a 20% increase in the yearly precipitation with the new Normals from the middle of the last century. Four of the top ten wettest years have occurred in the past 20 years in Des Moines which has certainly fueled the upward climb in precipitation. The increase has mostly come during the warm season from May through July with each month seeing an inch increase in precipitation over the past 50 years. There have also been significant gains in precipitation in November and December during this time as well.

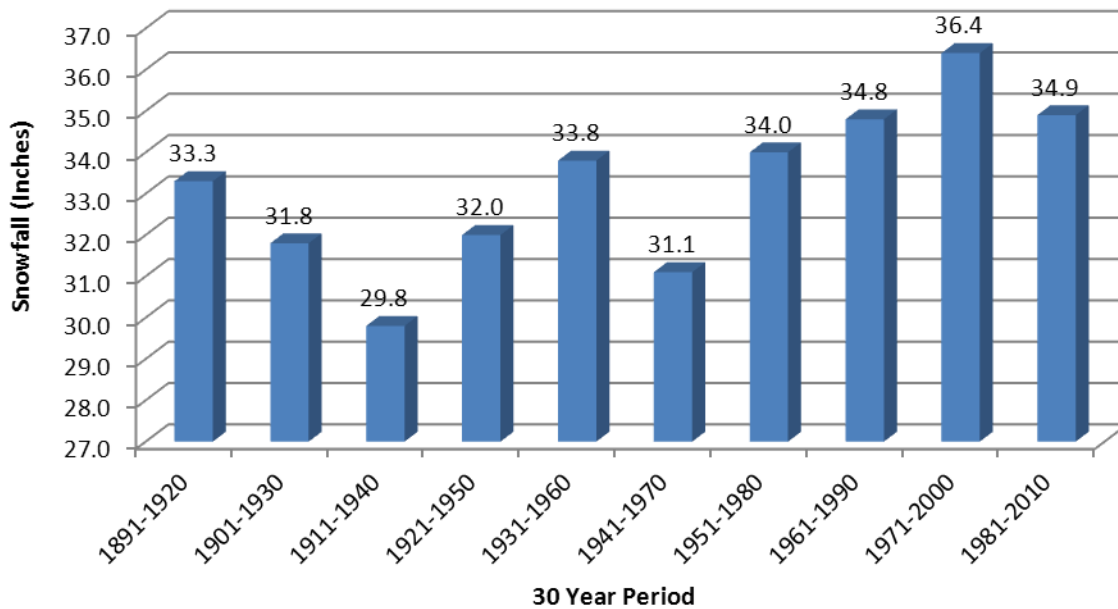
## Snowfall – Des Moines

Snowfall has seen a gradual increase since the averages started a century ago. However, some of this is likely a result in the way snowfall was measured. Early in the historical record, snow was often measured daily which allowed time for compaction between when the snow fell and when it was measured. More recently, especially since World War II, snow has been measured every six hours which allows less time for compaction and likely greater snowfall amounts.

### 30 Year Average Annual Precipitation

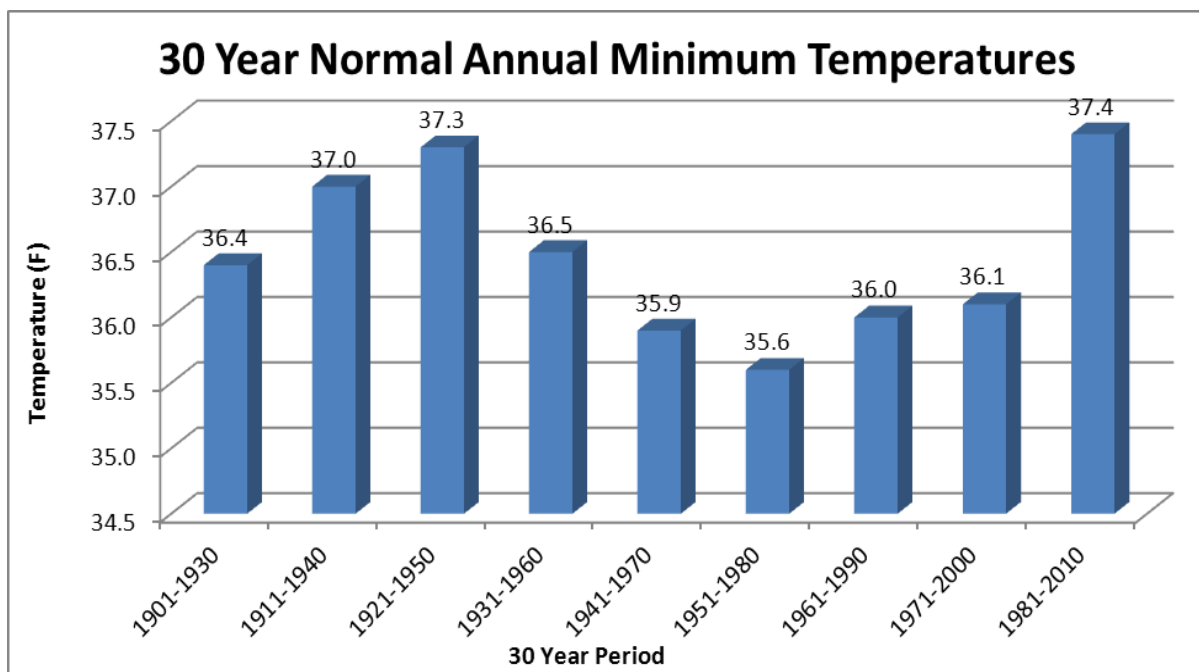
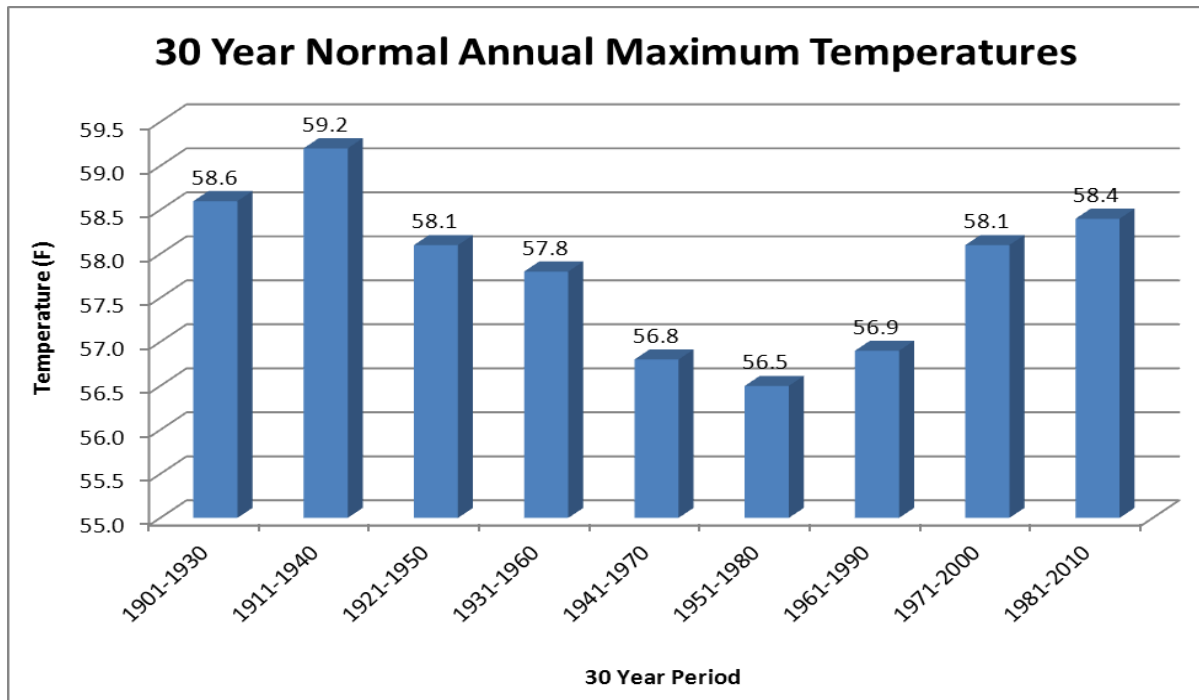


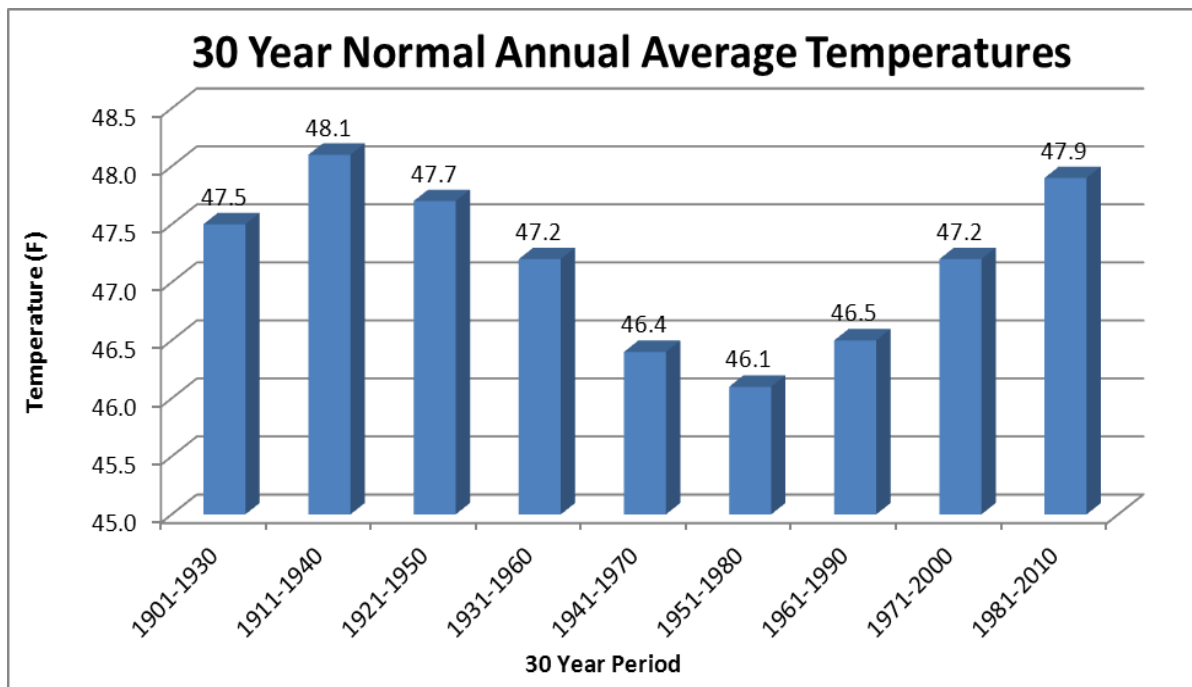
### 30 Year Average Annual Snowfall



## Temperatures – Waterloo

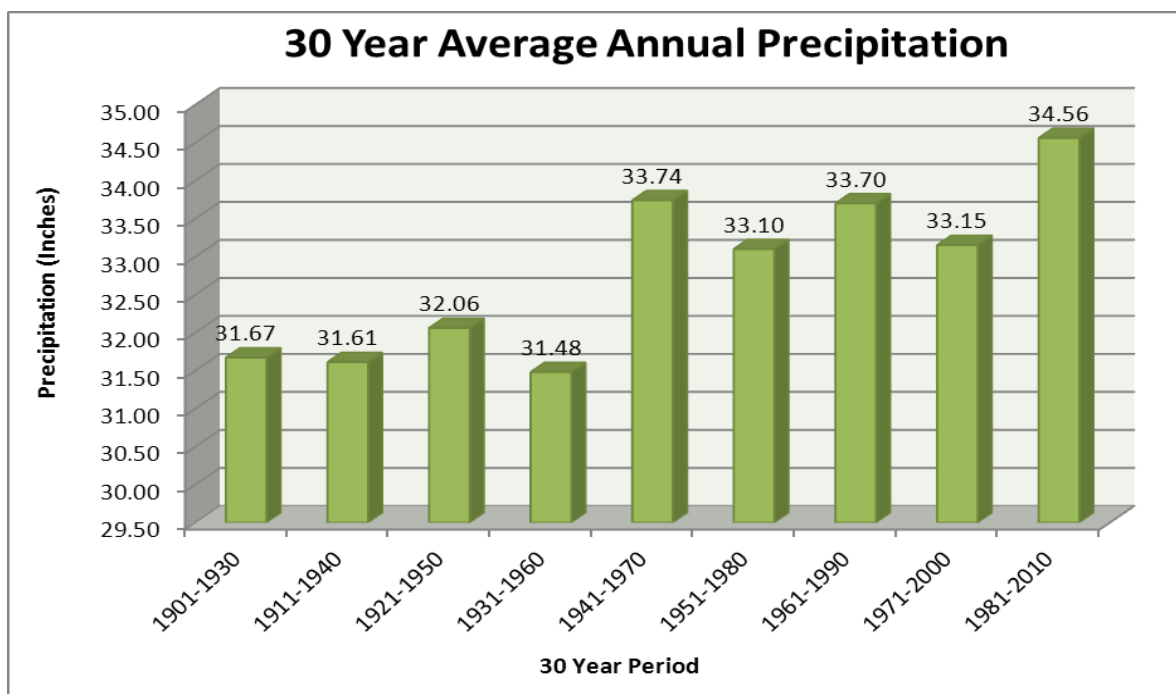
The graphs for Waterloo start with the 1901-1930 time period as opposed to the Des Moines graphs which began with the 1881-1910 timeframe. The graphs are similar to Des Moines with a warm period to during the first third of the 1900s with a gradual cooling during mid-century. Then temperatures begin a climb to the current time with the average annual temperature now very similar to the early part of the 1900s.





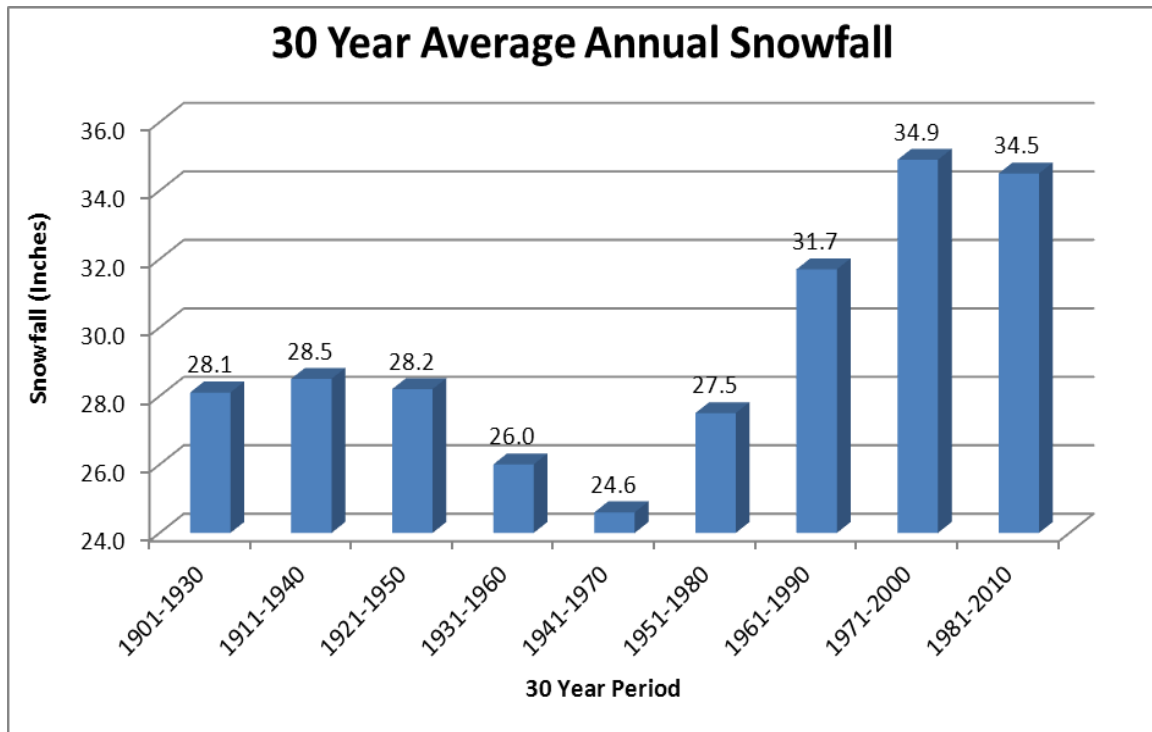
## Precipitation – Waterloo

The precipitation graph shows two distinct periods of precipitation for Waterloo. The four initial periods all range from 31 to 32 inches with the last five ranging from 33 to 34.5 inches. This is likely influenced by a station move and new rain gage siting and precipitation equipment which occurred in the early 1950's. However, it is also likely that there is some natural increase in precipitation as well during this time, similar to the Des Moines graph.



## Snowfall – Waterloo

The snowfall graph also displays lower values in the first half of the graph with higher values toward the end. This is likely the combination of measurement techniques and a site move that occurred in the middle of the 1900's. Snow amounts since the 1960's have generally been around 5 to 8 inches more than the early 1900's. It's essentially very difficult to discern any sort of trend given the noise in the graph.



If you have any question, please contact Craig Cogil – [craig.cogil@noaa.gov](mailto:craig.cogil@noaa.gov)